Installation and Operating Instructions

Raypak Commercial Swimming Pool Heaters

Part 1: Safety warning

Part 2: Models 538 to 4224

Part 3: Warranty

CONTENTS

Part 1: For Your Safety

Part 2: Models 538 to 4224

Section 1. Installation Instructions
Section 2. Owners Operating Instructions

Part 3: Warranty

Date of Installation: _____ // _____ // _____

Model No. _____

Serial No. _____

Installed by: _____

Purchased from: _____

This Installation and Operating Instructions Manual is provided with the necessary information for the proper installation, operation and maintenance of your Raypak Heater. Please review and follow these procedures carefully. Keep this manual in a safe and accessible place for easy reference in the future.

For your safety do not operate this appliance before reading this instruction booklet.

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. For assistance or additional information consult your Raypak distributor, qualified installer, or service agency.

WHAT TO DO IF YOU SMELL GAS?

DO NOT try to light any gas appliance

DO NOT touch any electrical switch.

Turn off the gas supply at the gas meter

Immediately, call your gas supplier or licensed gasfitter.

NOTE: Some gases are heavier than air and it may be necessary to check for gas leaks at floor level.

CAUTION

DO NOT Operate this appliance before reading this instruction booklet.

DO NOT Place articles on or against appliance.

DO NOT Store chemicals or flammable materials in the same room as this appliance.

DO NOT Store chemicals or flammable materials, on, or spray aerosols near this appliance.

DO NOT Operate with panels, covers or guards removed from appliance.

DO NOT Enclose this appliance (applies to external models only).

DANGER

Water temperatures above 45 Degrees Celsius can cause severe burns. Children, disabled and elderly persons are at the highest risk of being scalded. Feel water before bathing or showering and supervise where necessary.

Keep this manual in a safe and accessible place for easy reference in the future.
This Installation and Operating Instructions Manual is provided with the necessary information for the proper installation, operation and maintenance of your Raypak Heater.

Please review and follow these procedures carefully.

Model No. ..... Serial No. ..... Installation Date .....

Part No. 209130.5: Effective 08/01/2001 (Replaces: 01/10/2000)

CAUTION!

Ceramic Firetile Refractory is used in Raypak Heaters

Possible risks of irreversible effects
Harmful by inhalation
May be irritating to the skin, eyes and respiratory system.

WHEN HANDLING

- Minimise airborne dust.
- Wear an approved mask or respirator.
- Avoid any contact with the skin and eyes.
- Wear suitable loose-fitting, long-sleeved clothing.
- Wear gloves and eye protection.
- Consult Occupational Health and Safety Authority for any further information.

AFTER HANDLING

- Rinse any exposed skin areas with clean water.
- Wash work clothing separately.

FIRST FIRING OF HEATER

- Fumes and smoke may be produced.
- Avoid breathing fumes, ventilate area to clear.
- Production of smoke should cease within 30 minutes

REMOVAL OF USED PRODUCT

- Wear an approved mask. Over-exposure to dust formed after service may cause respiratory disease since cristobalite, a form of crystalline silica may be formed above 900 degrees Celsius.
- Consult Occupational Health and Safety Authority for further information regarding removal of used ceramic fibre linings.

Raypak Commercial Swimming Pool Heaters

Part 2: Models 538 to 4224

PART 2 - SECTION I - INSTALLATION INSTRUCTIONS

Before commencing installation:

1. Read these instructions in full !

2. Check that the heater you have been supplied is suitable for the type of installation and the gas available. The gas supply pressure must be between the minimum and maximum shown on the heater data plate.

GENERAL

These instructions are provided to ensure the correct installation and operation of your Raypak Swimming Pool Heater.

Should any questions arise regarding the specifications, installation, operation or servicing of this heater, we suggest that the local representative or Raypak Customer Service be consulted.

Raypak heaters utilise a finned copper tube heat exchanger resulting in a low water content and reduced "stand by" heat losses. Therefore a circulator pump of sufficient capacity to match the heater model must be installed in the system.

Raypak heaters are fitted with Australian Gas Association approved components and all boilers in this range are designed to comply to AG501.

Some models are designed for either indoor or outdoor installation subject to the appropriate indoor draft hood or outdoor stackless top being fitted.

Check that the correct top for your installation has been supplied.

INSTALLATION PROCEDURES

All electrical, gas piping, gas connection and flueing of the heater must only be undertaken by a properly authorised person. The installation must comply with local gas, AG601-2000 and electrical codes and/or statutory body codes and regulations.

Raypak heaters must be installed in the filtration system, in the pool return line, downstream from the filter.

INSPECTION OF EQUIPMENT

Check the heater and associated equipment for any damage and if so notify your local representative or Raypak for any further instructions.

DO NOT INSTALL OR START UP ANY RAYPAK SUPPLIED PRODUCT THAT HAS BEEN DAMAGED, WITHOUT FIRST CONSULTING RAYPAK, AS ANY DAMAGE OR FAULTS CAUSED BY UNAUTHORISED START UP MAY NOT BE COVERED BY OUR WARRANTY.

HEATER LOCATION AND CLEARANCES

The heater should be located so that any possible water leaks will not cause damage to any adjacent areas or structures.

When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the heater.

This pan must not restrict combustion air flow.

The heater must be mounted on a level non-combustible base such as a concrete slab, concrete plinth, steel plate etc.

Raypak heaters and equipment must not be installed on carpeting.

The front of the heater must not be obstructed by any gas or water piping, electrical conduits, trees, fences, or other equipment, etc.

See the following chart(s) for minimum clearances.

Clearance from non-combustible materials:

Model	Rear	Front	LH Side	RH Side	Ceiling
538 to1922	150mm	750mm	300mm	300mm	1200mm
2004 to4224	350mm	1200mm	600mm	600mm	1200mm

Clearance from combustible materials:

Model	Rear	Front	LH Side	RH Side	Ceiling
538 to1922	600mm	750mm	600mm	600mm	1200mm
2004 to4224	600mm	1200mm	600mm	600mm	1200mm

COMBUSTION/VENTILATION AIR

Indoor model heaters must only be installed in a protective enclosure or properly constructed plant room with adequate ventilation in accordance with AG 601 - 2000 Gas Installation Code.

Ventilation shall be via 2 permanent openings directly to outside, one at an upper level and one at low level.

The minimum free area provided by each vent shall be as calculated by using the following formula, unless otherwise stated in AG 601.

A =1.5 X T

Where A = Minimum free ventilation area (cm2)

T = Total hourly input of all appliances (Mj/h)

Note: The minimum dimension of any opening shall be 6mm.

Please take the heater location into account when locating the fresh air vents because any excessive draft will cause flame disturbance and probable pilot outage. In some cases where excessive draft effects the burner, the risk of major damage is high due to incomplete combustion.

Installations which obtain air from a source other than directly from outside must comply to AG601.

Warning: Air supply to the heater room must not be affected by mechanical exhaust vents located in other parts of the house or building, such as kitchen or bathroom fans, spa blowers, etc.

Mechanical exhaust vents may create a negative pressure in the heater room that can become a hazard by asphyxiation, explosion or fire.

Caution: Do not store chemicals or flammable materials in the same room or near this heater. Do not use aerosols near this heater whilst it is in operation.

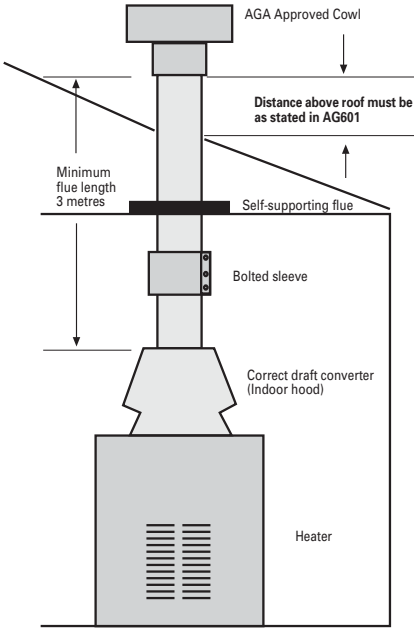
FLUEING

The correct Draft hood must be fixed to the top of the heater and connected to a properly constructed flue, vented to the outside using only approved fittings.

Reduction of the flue diameter or alteration to the draft hood voids all warranty. Where flueing may be difficult, please contact Raypak for advice, we will have solutions, particularly where a fan assisted flue may be the answer.

The weight of the flue must not rest on the heater draft diverter, the flue must be self supporting and be fitted with a disconnection section (bolted sleeve) to enable the heater top and draft diverter to be removed easily, for servicing. Where practicable the flue should run vertically. Lateral (raised above horizontal) is acceptable but the run of a flue shall not exceed 50% of total flue height and shall be designed to rise not less than 20 mm per 1 m run. The flue must be terminated with an approved cowl.

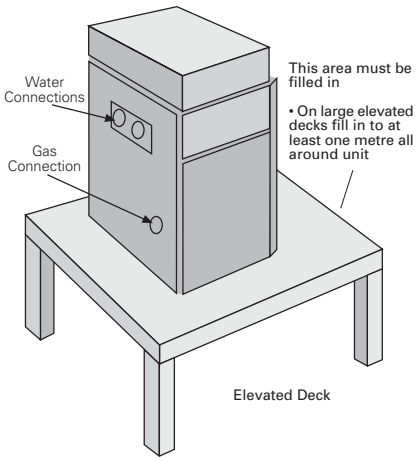
Raypak recommends a minimum length of vertical flue of three (3) metres to ensure correct draft.



OUTDOOR INSTALLATIONS.

An outdoor heater must not be installed inside any roofed structure or under eaves, roof overhangs, or pool decks. It should also be at least 1500 mm, in any direction from any window or fresh air opening.

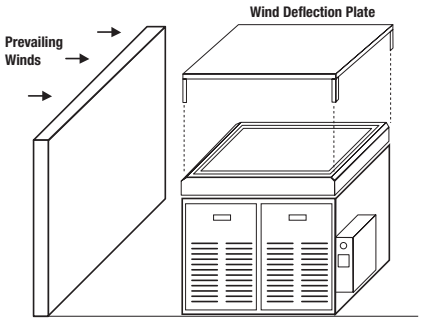
When installing the heater on a raised base, please make sure that the base material is solid and filled in. E.G. If steel mesh decking is used, a suitable plate material must be used to fill in the perforations. This is very important, as any excessive drafts must not be able to enter the unit from directly underneath.


Water Connections
Gas Connection
This area must be filled in
• On large elevated decks fill in to at least one metre all around unit
Elevated Deck

HIGH WIND CONDITIONS

On rare occasions or in areas where high winds frequently occur, it may be necessary to locate the heater a minimum of one (1) metre from high vertical walls, or install a wind break so that the heater is not in direct wind current.

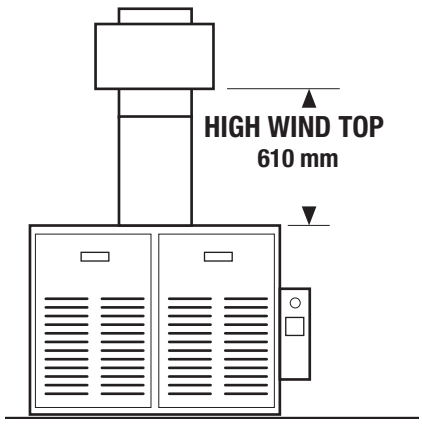
Models 538 to 1852, where the installation may cause "Down draft", Raypak can supply a Wind Deflection Plate (at extra cost), to eliminate constant ignition failures or flame disturbance, the need for which would be determined by an approved Raypak Service Person or Agent.



High Wind Windbreak

In areas of "constant extreme winds" or where a Wind Deflection Plate is not appropriate, it may be necessary to replace the "standard" low profile outdoor hood with a HIGH WIND TOP which would be at extra cost.

The HIGH WIND TOP serves the same function as the low profile outdoor hood and should be installed in accordance with the same clearance requirements.



GAS SUPPLY

The gas supply pipe must be sized to give sufficient pressure for the correct operation of the heater. The gas line must be fitted with an isolation valve. Consult AG 601 for further details.

Caution: The gas supply must be isolated from the heater during pressure testing of the gas fitting line.

Dissipate test pressure before reconnecting to the heater.

Failure to follow this procedure may result in damage to the gas valve. (Over pressured valves and equipment are not covered by our warranty.)

The heater and it's gas connection must be thoroughly leak tested before placing in operation. Use soapy water and a manometer for leak test.

DO NOT USE NAKED FLAME.

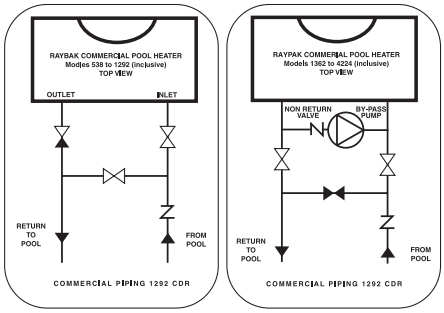
WATER CONNECTIONS AND SYSTEM PIPING

The heater must be installed to the appropriate and/or local codes. For typical piping systems and heater applications it is essential that Raypak be consulted, Raypak heaters do have some special requirements and if you are not familiar with Raypak products we can save you unnecessary inconvenience!

Water pipe connections to heater are:

538 to 1292 - 50 mm copper slip fit or 2" NPT,
1362 to 1922 - 80mm BSP and
2004 to 4224 - 100 mm BSP.

Do not reduce the pipework size and heater water connections without allowing for any friction loss which will occur. Low water flow will cause damage to the heater and system components. Please install pipework using approved fittings and isolating valves that will allow easy disconnection for any future maintenance requirements.



Use a minimum of one (1) metre of copper or stainless steel tube for the final connections to the heater inlet and outlet.

NEVER CONNECT LOW TEMPERATURE PVC PRESSURE PIPE DIRECTLY TO THE HEATER.

A non-return valve must be installed on the inlet side of the heater, after the filter.

PUMP SELECTION

The filtration pump must be sized to provide an adequate water flow for the filtration system and the heater. In some cases however, this can cause a high back pressure which reduces the filtration capacity and in this case it would be more of on advantage to install an additional pump for the heater only. This pump must be installed on the inlet side.

DO NOT connect the pump to the heater outlet.

Some heater models incorporate their own By-Pass Pump but this is used to control the temperature of the water entering the heater to prevent condensation and scale and will not be suitable as the additional pump described above.

Refer to the Flow Rate chart following when sizing the pump.

Where the water flow rate exceeds the maximum shown in the chart, a by pass valve must be installed to reduce the water flow through the heater.

A pump run on timer must be fitted to remove any residual heat from the boiler and prevent any nuisance tripping of the high limit switch.

WATER FLOW RATES.

Model	Water flow (l/sec)	
	min	**max**
538 to 1292	4.5	7.5
1362 / 1412	1.9	3.2
1492 / 1552	2.2	3.5
1662 / 1722	2.5	4.1
1852 / 1922	2.8	4.4
2004 / 2214	3.2	5.0
2404 / 2634	3.8	5.9
2804 / 3164	4.7	7.2
3304 / 3694	5.6	8.4
3804 / 4224	6.2	9.4

We recommend that the pump be selected that will deliver the maximum flow and the installation of an external by-pass in all cases so as to allow for the field adjustment if required.

IMPORTANT: When installing a new heater to an old system, it is a Raypak requirement that the system and its equipment be inspected and if necessary, drained and flushed out with clean fresh water, before the new heater is connected. Failure to do this may cause blockages and/or heater damage which is NOT COVERED BY WARRANTY and any damage caused would result in extra costs to repair etc.

IF THERE IS ANY DOUBTS ABOUT SYSTEM, DRAIN AND FLUSH AS A PRECAUTION.

SYSTEM OVER TEMPERATURE CUT OUT

The installation may require a "System - Manual Reset High Limit", refer to AG601 and other relevant codes.

AUTOMATIC CHEMICAL DOSING EQUIPMENT

All automatic chemical dosing devices, including salt chlorination, MUST be installed downstream of the heater and in a manner that will not allow the chemically dosed solution to enter the heater before being thoroughly mixed with the main pool or spa water.

PRESSURE RELIEF VALVE

The standard pressure relief valve supplied is set to 410 kPa (60 PSI).

WATER SENSOR LOCATION

On models 1362 to 4224, where a By-Pass pump is an integral part of the heater, the water sensor of the Digital Thermostat is supplied with the unit but it is not installed to the pipework.

Please insert the sensor as shown in the drawing below.

ELECTRICAL WIRING

The electrical power consumption of the heaters is:

Models 538 - 1292 (No By-Pass Pump):
240 Volts AC, 50/60 Hz, 100 VA approx.
Models 1362 - 1922 (UPS 32-80B By-Pass Pump):
240 Volts AC, 50 Hz, 1.4 Amps approx.
Models 2004 - 3164 (UMT 50-30Z By-Pass Pump):
240 Volts AC, 50 Hz, 3.0 Amps approx.
Models3304 - 4224 (UMT 50-60Z By-Pass Pump):
240 Volts AC, 50 Hz, 3.0 Amps approx.

A normal 10 or 15 Amp, single phase power circuit would be suitable.

Access to the electricals is achieved by removing the cover of the control panel. (See Location of Controls for different models.)

The heater must be properly earthed and Raypak highly recommends the installation of an RCD (Residual Current Device) for added electrical safety. If the site is "electrically noisy", a mains filter can be supplied at extra cost, to eliminate failures.

THE HEATER MUST NOT BE ABLE TO OPERATE WITHOUT THE CIRCULATING WATER PUMP RUNNING.

The heater (240 Volts) power supply must be "interlocked" via the auxiliary contacts of the pump contactor (relay) etc or alternatively the power supply for the pump and the heater must operate off the same circuit and isolation switch. (Parallel connection)

A Flow Switch is not regarded as an interlock and must not be used as one. Any other form of interlocking must be approved by Raypak.

A pump run on timer is required so that at any time that the heater is no longer required, the heater shuts off and the pump continues for at least ten (10) minutes.

A Raypak "economaster" is an optional extra available at extra cost for all heaters.

For servicing purposes we suggest that the isolation switch be installed as near as practical to the heater.

If there is any control wiring etc which is not isolated by this switch then a suitable warning label must be affixed to the heater which will also direct the service person to the isolation switch for that particular wiring. E.G. More than one isolation switch is required to turn off the power supply, Extra switch(es) on switchboard etc.

Caution: Do not locate cables in front of or underneath the burner, please consult Raypak for advice if unsure.

Where cables or conduit, trunking etc are to be mounted on the heater casing, please keep at least 10mm air gap from the heater casing to eliminate possible overheating.

Do not locate cables etc where they will restrict access covers, doors etc.

Where the clearance from the right hand side of the heater (models 538 to 1922) is restrictive, please notify Raypak at the time of manufacture and we may be able to relocate the control panel for a minimal extra cost, if this is not possible then a field retrofit may be the best solution. (At extra cost)

There are many variations to the types of controls available and also RUN & FAIL indication can be supplied. Ask Raypak what is available.

COMMISSIONING

WARNING: COMMISSIONING MUST ONLY BE UNDERTAKEN BY A PROPERLY AUTHORISED AND IN SOME CASES APPROPRIATELY LICENSED PERSON WHO IS FAMILIAR WITH SAFE COMMISSIONING PROCEDURES. THE COMMISSIONING MAY REQUIRE INSPECTION BY THE GAS SUPPLY AUTHORITY, CHECK IF THIS IS APPLICABLE.

RECOMMENDED COMMISSIONING PROCEDURE.

1. Check that all necessary approvals and appropriate documents have been obtained.

2. Ensure that the heater is clean and the surrounding area is clear of all combustible and flammable materials.

3. Remove all liquids and chemicals from the plant room and check that combustion air openings are not obstructed. Chemicals must not be stored in the plant room - this is extremely dangerous and may damage the heater.

4. Fill the system with water and expel any air as required.

5. Purge all air from gas supply piping.

CAUTION: Liquid Propane Gas is heavier than air and sinks to the ground, exercise extreme care in lighting boiler in confined areas.

6. Test ALL gas connections for leaks, using soapy water and a manometer.
(NOT A NAKED FLAME)

7. Conduct a visual inspection of the heater and equipment for any damage or installation problems and report as necessary.

8. Check that the correct power supply is available and the circulation pump is electrically interlocked with the heater.

9. Check that the ventilation to the plant room complies with Raypak requirements, AG601 and local authority regulations.

If mechanical ventilation is provided, check its operation and any interlocks.

10. Check that the flue complies with the appropriate regulations and is fitted with an approved termination cowl.

11. Check that the gas supply is isolated and with the main gas valve isolation switch turned off, check the boiler gas train and components for gas escapes.

12. Start the circulation pump and verify the pressure switch operation, then test the operation of the heater with no gas flow to confirm its operation up to the lockout status. Pressure switch adjustment is required if the unit won't fire and after faultfinding it is verified that the pressure switch has not closed. Adjust the pressure setting at the thumbwheel to a lower setting, then re start the heater. If the heater fires up but won't shutdown when the water is reduced then it will require adjustment to the thumbwheel to a higher setting and the heater restarted. (In some cases the electrical interlock between the pump and heater may require a temporary disconnection to carry out tests.)

13. Open the gas supply valve, switch on the main valve isolation switch and reset the ignition control to fire the heater.

14. When the unit fires and reaches high fire, set the burner gas pressure to that shown on the data plate which is located on the front of the heater.

15. Verify that the high limit and any other safety devices are operating correctly.

16. Check the water temperature rise of the heater and adjust the water flow as necessary. For models 538-1292, measure the temperature difference between the Inlet and Outlet pipes at the heater, with the unit at full fire.
The difference should be approximately 5 - 10 Deg. C.
If it is lower than recommended, decrease the water flow through the heater.
If it is higher than recommended it indicates that the water flow rate is too low.
For models 1362 to 4224, the temperature gauges which are fitted to the heater can be used as a guide.
The objective is to maintain a temperature of approximately 50 Deg C at the outlet side of the heater, 30 Deg C at the inlet side, with the unit at full fire.
The digital display on the electronic thermostat will indicate the pool water temperature.

17. Check that the flue is operating correctly or if there is evidence of Down draft etc report as necessary.

18. Check operation of any water pressure relief valves etc and set up the controls to desired settings.

19. Ensure that the customer is supplied with this manual and you have demonstrated the operation of the unit etc.

It is quite normal for the heater to produce some smoke and possible condensation for the first thirty (30) minutes of firing from new.

WARNING - Should overheating occur or the gas fail to shut off, turn off the gas isolation valve adjacent to the heater and then examine the unit or call for assistance.

SECTION II - OPERATING INSTRUCTIONS

WHAT IF YOU CAN SMELL GAS?

SAFETY INSTRUCTIONS

- **DON'T TRY TO LIGHT ANY GAS APPLIANCE.**
- **DON'T TOUCH OR OPERATE ANY ELECTRICAL SWITCH.**
- **TURN OFF THE GAS SUPPLY AT THE GAS METER OR ISOLATION POINT.**
- **CALL YOUR GAS SUPPLIER OR QUALIFIED GASFITTER FROM A NEIGHBOUR'S TELEPHONE.**

Use only your hand to turn the pilot gas control knob. Never use any tools.

If the knob will not turn by hand do not try to repair it, call a qualified service technician.

Force or attempted repair may result in a fire or explosion.

Do not use this heater if any part has been under water.

Call a qualified service technician immediately to replace any part or control system that has been under water.

Always keep the heater clean and the surrounding area clear of all combustible and flammable materials.

Remove all dangerous liquids and chemicals from the plant room and check that the combustion air openings are not obstructed.

Chemicals must not be stored in plant room. This is extremely dangerous and also very damaging to the heater.

If you don't know what to do.

Ring for assistance.

LIGHTING PROCEDURE.

1. STOP read the safety information.
2. Turn heater ON/OFF power isolation switch to the "OFF" position.
3. Turn "OFF" any other electrical power to the heater. (If required)
4. Turn the gas supply valve, fitted next to the heater "OFF".
5. Wait 5 minutes to clear out any gas.

   STOP!

If you smell gas, follow safety instructions.

If you do not smell any gas continue ...

6. This heater is equipped with an ignition device that automatically lights the burners.

Don't attempt to light the burner by hand.

7. Turn the gas supply valve to the "ON" position.
8. Turn on all electrical power to the heater. (If required)
9. Set the thermostat or temperature control to the desired temperature setting and turn the heater ON/OFF switch to the ON position.
10. The heater will go through its light up sequence.

If the heater fails and the "red" reset light illuminates, turn off the power supply, wait one (1) minute, turn the power supply back on and when the reset illuminates again, push the reset button, which will turn off the fail light and restart the light up sequence.

If heater still does not light, turn off gas and power supply and contact your qualified service technician.

TO TURN OFF THE HEATER

1. Turn the heater ON/OFF power isolation switch to the "OFF" position.

EMERGENCY SHUT-DOWN

1. Turn "OFF" the power supply to the heater
2. Turn "OFF" the gas isolation valve fitted close to the heater or the main gas supply.

AFTER START-UP WARNING

Should overheating occur or the gas supply fail to shut off, turn off the gas isolation valve located adjacent to the heater turn off the power supply switch and call for assistance.

VISUAL INSPECTION FOR DANGER!

Keep the heater area free from chemicals, combustibles and flammable materials.

Do not obstruct the flow of ventilation air into the plant room.

Regularly clean the heater cabinet air louvres of any dust, lint and debris.

Failure to follow these safety precautions can cause fire, explosion, or asphyxiation.

With the heater turned on and heating, remove the door (if fitted) and make a visual check of the burners. The flame should be blue with a well-defined pattern.

A yellow or floating flame indicates restricted air openings, incorrect orifice size or possible excessive draft. Continual yellow flames indicate some restriction of the combustion air openings.

A bright orange, luminous flame is not normal and can cause sooting under prolonged operation.

Observe for any indication of soot. The presence of soot accumulation would indicate an abnormal operating condition.

Should any abnormalities occur, turn the heater off and contact your installer or service organisation.

WARNING: Operation of the heater when faulty will result in rapid and severe damage to the heater, which is not covered by our warranty.

SERVICE ASSISTANCE

Service must only be undertaken by properly authorised personnel.

It is a requirement of all Raypak and all gas authorities that the heater be serviced at least once per year, where it is used in a specific application, e.g. heating, it would be practical to perform the service at the commencement of the heating season, or at any time there may be an indication of a problem.

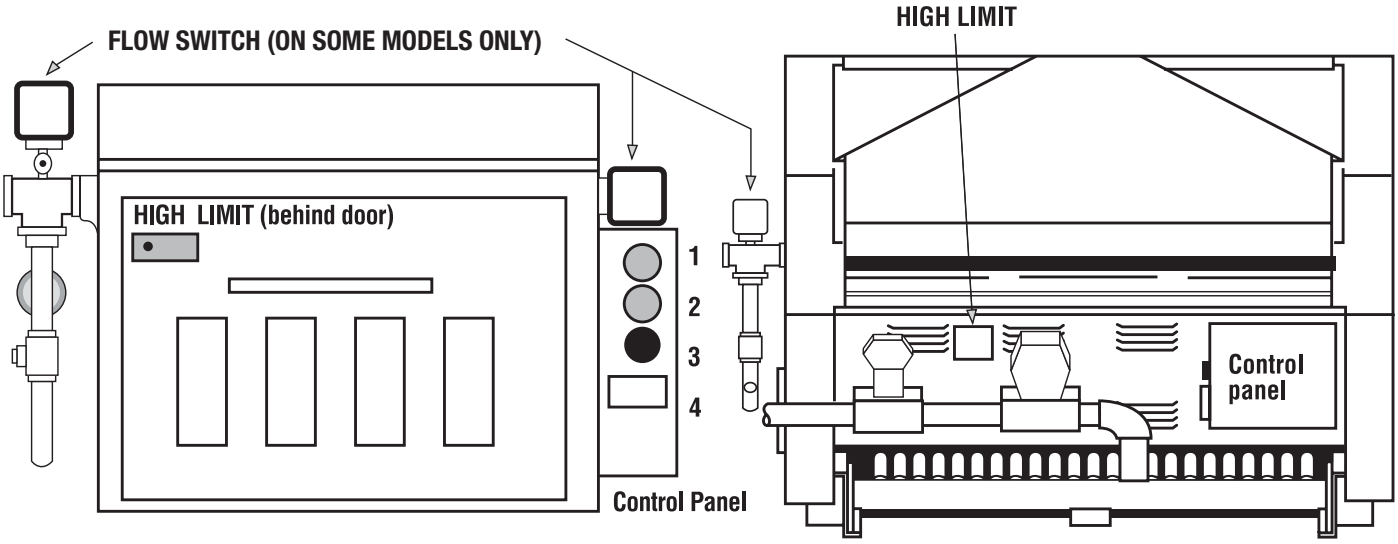
This service should include the cleaning of the gas burners, inspection of waterways, and checking of all controls for correct operation.

It is important and very often will save time if you state the model number, serial number and type of gas used. This information will be found on the heater data plate.

Your local Raypak distributor will arrange for your service or recommend a qualified service organisation or visit:

www.raypak.com.au

LOCATION OF CONTROLS



MODELS 538 TO 2004, 2404, 2804, 3304, 3804 MODELS 2214, 2634, 3164, 3694, 4224

1. Flame Fail Reset (Illuminates on FAIL) 2. Alarm Fail & Mute Button (if fitted)
3. Alarm Siren (if fitted) 4. Temperature Control (Digital Thermostat)

1. FLAME FAILURE RESET:

This is a combination rest button and indicator lamp. It indicates, when illuminated, that the ignition system has shutdown on its safety control.

2. ALARM FAIL & MUTE BUTTON:

This is an optional extra, which will illuminate when the heater has generally failed to operate on its safety controls. The circuitry activates an audible alarm on fail, which can be silenced by pressing the reset button, however the light will remain illuminated until the cause of the failure has been reset.

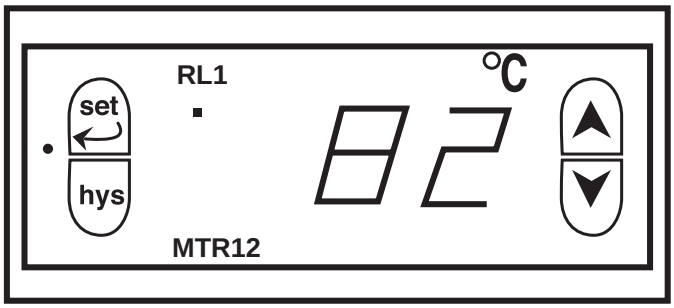
4. TEMPERATURE CONTROL:

Digital type thermostat with pushbutton adjustment.

3. ALARM SIREN:

This is used in conjunction with the optional extra, ALARM FAIL system and emits a high pitched "warble" when activated.

LOCATION OF CONTROLS



INSTRUCTIONS FOR USE OF LAE ELECTRONIC THERMOSTATS.

Raypak uses the MTR12T1RES series thermostats which is programmed to operate in the heating mode.

The only adjustments that should normally be required are:-

Set point (set):- Which is the water temperature that you require.

Differential (hys): - Which is the difference between the thermostat turning OFF and then ON again when the temperature has fallen. eg. 1ºC would be ideal for controlling a swimming pool.

To Adjust the Set Point:-

- Turn on the power supply to the heater.
- The Digital display will show the actual water temperature.
- Press the "set" button, L1 will be displayed for 2 seconds.
- Then the Set Point temperature will be displayed.
- By pressing the "UP" or "DOWN" button, you can set the desired temperature.

To Adjust the differential:-

- Turn on the power supply to the heater.
- The Digital Display will show the actual water temperature.
- Press the "hys" button, HY1 will be displayed for 2 seconds.
- Then the value will be displayed. (It must be a negative value.)
- Press the "UP" or "DOWN" button to set your desired differential
- This is adjustable from - 1 to -25 which relates to 1 to 25 Deg. C.

LAE ELECTRONIC THERMOSTAT DEFAULT SETTINGS.

Raypak may have programmed this thermostat to avoid any "nuisance" failures as:-

vSP-(Min Set Point) 0ºC

- the heater won't operate if the water temperature is below this setting.

^SP-(Max Set Point) 40 Deg. C

- the device turns off the heater if the water temperature exceeds this setting.

rt1-(RL1 Rest Time) 0 min

- there is no delay in relay operation.

PF1-(Probe Failure) OFF

- if the Probe (water sensor) fails, the relay will turn off the heater..

ADJ-(Probe Offset) 0 Deg. C

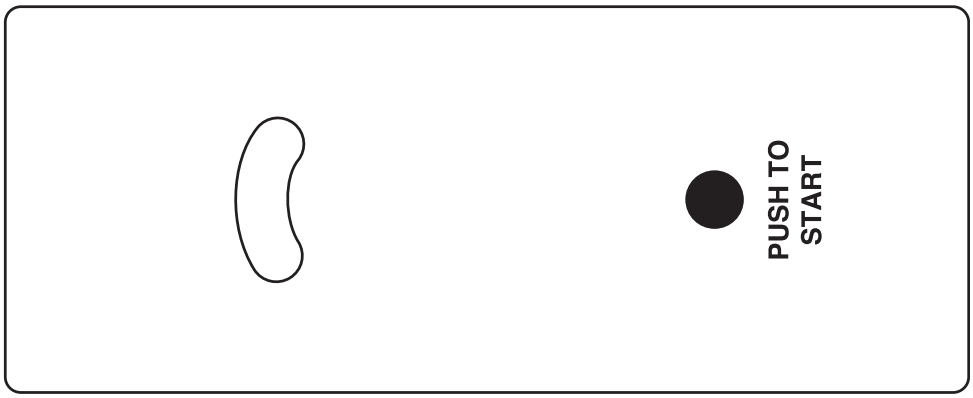
- the relay operates on actual temperature of the sensor.

HY1-(Mode) -25

- the negative value programs the device for heating.

TAMPER PROOF SETTINGS.

Decide what values for the set point and the differential suits the application. Adjust the program so that "vSP & ^SP" are the same value as the set point and adjust the program so that "HY1" is the same value as the differential. The operator now cannot adjust the settings, however this is not totally foilproof, as re-programming is still possible. For total protection against tampering, fit a locked or anchored cover over the thermostat buttons.



MODELS WHICH ARE CONNECTED TO A MICROZONE SYSTEM

If the heater(s) are operated by a Microzone system, there will be a rotary type control knob fitted which should be aligned to the desired temperature.

HIGH LIMIT SWITCH.

ALL heaters are fitted with a manual reset high limit switch. This control will shut down the heater in the event of a fault with the temperature control and/or overheat of the system.

This setting will vary, depending on the type of system being used but must not be too close to the operating temperature, as nuisance tripping will occur.

The usual setting is approximately 60 - 65 ºC

To set the Honeywell L6188C High Limit, remove Philips Head screw next to red reset button, remove lighter grey cover, pull out darker grey top cover to reveal adjustment.

WATER TREATMENT

For your health and the protection of your pool equipment it is absolutely essential that your pool water is chemically balanced.

WARRANTY PROCEDURE FOR WATER LEAKS FROM HEAT EXCHANGER.

CORROSIVE WATER VOIDS ALL WARRANTIES!

1. The service technician inspects the tube bundle, if the water leak is through one or more pinholes (usually caused by corrosion) then the warranty is voided and therefore any repairs will be paid for by the owner.

2. If the service technician deems that the water leak is not caused by corrosion, the technician can replace the faulty parts at the technician's risk. Raypak will supply the new components, the service technician will pay all charges and then there may be a refund when the parts have been returned to Raypak and we have agreed that the warranty is applicable.

3. If there is an objection to this policy, we suggest that the faulty components be submitted to an independent testing facility for analysis, at the customer's expense. If the testing facility deems that the leaking was caused by a manufacturing defect, on production of the official report and details of costs, Raypak will refund all relevant expenses incurred by the customer.

RECOMMENDED SERVICE PROCEDURES

It is a Raypak requirement that all Raypak supplied equipment is serviced at least annually.

In some installations, due to the appliance location and/or workload it may be necessary to perform a service every six months.

RECOMMENDED SERVICE PROCEDURE FOR ANNUAL SERVICE.

- Isolate gas, electricity and water as required.
- Remove access covers and door(s) as required.
- Disconnect and remove Burner Tray.
- Dismantle and clean pilot assembly(ies), including injector(s).
- Clean and re-align electrode(s) and/or flame rod(s) and /or thermocouple(s).
- Clean main burner injectors and burner bars as required.
- Inspect, repair if minor and clean combustion chamber.
- Report on any major combustion chamber damage.
- Inspect external area of heat exchanger, clean fins and repair if minor.
- Check water seal area and report any damage.
- Operate Pressure Relief Valve (if Fitted) manually to check that the drain is clear and the valve reseals.
- Pool Heater: Remove and test Unitherm Governor(s), replace if faulty.
- Refit Burner Tray and reconnect gas train etc.
- Perform gas soundness tests to the gas train.

(Any failures must be reported and repaired before recommissioning appliance.)

- Check all air vents and louvres, clean as required.
- Restore gas, electricity and water as required.
- Recommission unit, check and prove the operation of all safety devices.
- Check and monitor the operation of the appliance for at least ten (10) minutes.
- Refit access covers and doors as required.
- Clear and remove any dust and debris from the appliance and its immediate area.

RECOMMENDED SERVICE PROCEDURE FOR SIX MONTHLY SERVICE.

- Isolate gas, electricity and water as required.
- Remove access covers and doors as required.
- Restore the gas, electricity and water as required.
- Visually inspect main burner and pilot, check operation if needed.
- If necessary, remove Burner Tray and service as required. (Refer to Annual Service).
- Check over the appliance thoroughly and report any damage immediately.
- Pool Heater: Remove and test Unitherm Governor(s), - (if faulty, Unitherm must be replaced before re-commissioning appliance).
- Check the heat exchanger and water seal areas and report any damage, if necessary.
- Check air vents and louvres, clean as required.
- Check operation of ignition system and all safety devices.
- Check operation and calibration of all temperature control devices.
- Check operation (and monitor the operation) of appliance for at least ten (10) minutes.
- Refit access covers and doors as required.
- Clean and remove any dust and debris from the appliance and its immediate area.

ONLY A SUITABLY LICENSED PERSON MAY PERFORM ANY REPAIRS, SERVICE AND/OR COMMISSIONING OF GAS APPLIANCES.

WARNING!

Raypak

CORROSIVE WATER **VOIDS** WARRANTY

For your health and the protection of your pool equipment, it is essential that your water is chemically balanced.

For years of trouble-free use of your Raypak heater, the following levels may be used as a guide:

Recommended Maintenance Level(s)	Fibreglass Pools	Fibreglass Spas	Other Types Pools/Spas
Water Temp (Deg C)	20 to 31	32 to 40	20 to 40
pH	7.3 to 7.4	7.3 to 7.4	7.6 to 7.8
Total Alkalinity (ppm)	120 to150	120 to 150	150 to 200
Calcium Hardness	200 to 300	150 to 200	80 to 100 (ppm)
Salt Level (ppm)	6000 Maximum	6000 Max	6000 Max
Free Chlorine	2 to 3 ppm	2 to 3 ppm	2 to 3 ppm

Note: Free Chlorine must not exceed 5 ppm. Automatic chemical dosing devices and salt chlorinators are usually more efficient in heated water.
Unless controlled, this can lead to excessive levels of chlorine which can damage your heater.

For further information, please please contact your supplier, a reputable pool shop or chemical supplier.

PART 4 - WARRANTY

RAYPAK WARRANTY FOR COMMERCIAL SWIMMING POOL HEATERS.

Raypak Australia Pty Ltd* will:

a) repair or, if necessary, replace any Raypak pool heater; or

b) replace any component (or, if necessary, arrange the installation of a new pool heater), which falls within the Warranty Periods specified below, in accordance with and subject to the following table and terms and conditions.

Component and Heat Exchanger Warranty (From Date of Installation)

Period 12 Months

Installation All Installations

Model P0538 - P4224

Warranty New component, tube bundle or heat exchanger (at Raypaks sole discretion) free of charge, including labour**

Notes:

* Rheem Australia Pty Ltd provides warranty service on behalf of Raypak Australia Pty Ltd.

**Refer to item 5 of warranty conditions.

Raypak Australia Pty Ltd reserves the right to transfer fully functional components from the defective pool heater to the replacement pool heater if required.

WARRANTY CONDITIONS

1. This warranty is applicable only to pool heaters manufactured from 1st August 2002.

2. The pool heater must be correctly commissioned by an authorised and licensed person and certified by the relevant State Gas Authority.

3. The pool heater must be installed in accordance with the Raypak installation instructions, supplied with the pool heater, and in accordance with all relevant statutory and local requirements of the State in which the pool heater is to be installed.

4. Where a failed component or pool heater is replaced under Warranty, the balance of the original warranty period will remain effective. The replaced part or pool heater does not carry a new warranty.

5. Where the pool heater is installed outside the boundaries of a metropolitan area as defined by Rheem Australia Pty Ltd or further than 25 km from a regional Rheem branch office or a Rheem Accredited Service Agent, the costs of transport, insurance and travelling between the nearest Rheem Australia Pty Ltd Accredited Service Agent's premises and the installed site shall be the owner's responsibility.

6. The warranty only applies to the pool heater and original or genuine (company) component replacement parts and therefore does not cover any plumbing or electrical parts supplied by the installer and not an integral part of the pool heater, eg. pressure limiting valve, stop cock, non-return valve, electrical switches, pumps, or fuse.

7. The pool heater must be sized to supply the hot water demand in accordance with the guidelines in Raypak Pool Heater literature.

WARRANTY EXCLUSIONS

1. REPAIR AND REPLACEMENT WORK WILL BE CARRIED OUT AS SET OUT IN THE RAYPAK POOL HEATER WARRANTY ABOVE, BUT THE FOLLOWING EXCLUSIONS MAY CAUSE THE POOL HEATER WARRANTY TO BECOME VOID, AND MAY INCUR A SERVICE CHARGE AND/OR COST OF PARTS.

a) Accidental damage to the pool heater or any component, including: acts of God, failure due to misuse; incorrect installation; attempts to repair the pool heater other than by a Rheem Accredited Service Agent or Rheem Service.

b) Where it is found there is nothing wrong with the pool heater, where the complaint is related to excessive discharge from the pressure relief valve due to high water pressure; where there is no flow of water due to faulty plumbing; where water leaks are related to plumbing and not the pool heater components; where there is a failure of gas, electricity or water supplies; where the supply of gas, electricity or water does not comply with relevant codes or acts.

c) Where the pool heater or pool heater component failed directly as a result of; excessive water pressure, temperature and/or thermal input; incorrect flow rate through the heat exchanger; corrosive atmosphere.

d) Where the pool heater is located in a position that does not comply with the Raypak installation instructions or relevant statutory requirements, causing the need for major dismantling or removal of cupboards, doors or walls, or use of special equipment to bring the pool heater to floor level, or to a serviceable position.

e) Repairs to the pool heater due to corrosion or scale formation in the waterways where the pool water chemistry is outside the guidelines detailed in the Operating and Installation Instructions.

2. SUBJECT TO ANY STATUTORY PROVISIONS TO THE CONTRARY, THIS WARRANTY EXCLUDES ANY AND ALL CLAIMS FOR DAMAGE TO FURNITURE, WALLS, FOUNDATIONS OR ANY OTHER CONSEQUENTIAL LOSS EITHER DIRECTLY OR INDIRECTLY DUE TO LEAKAGE FROM THE POOL HEATER.

In addition to this warranty, the Trade Practices Act 1974 and similar laws in each state and territory provide the owner under certain circumstances with certain minimum statutory rights in relation to your Raypak pool heater. This warranty must be read subject to that legislation and nothing in this warranty has the effect of excluding, restricting or modifying those rights.

FOR SERVICE TELEPHONE

Raypak Australia Pty Ltd

A.B.N. 65 078 743 414

131 031 AUSTRALIA

0800 657 335 NEW ZEALAND

or refer to local Yellow Pages

NOTE: Every care has been taken to ensure accuracy in preparation of this publication. No liability can be accepted for any consequences, which may arise as a result of its application.

NOTES

Raypak

RHEEM SERVICE 131 031
WWW.RHEEM.COM.AU

Manufactured by
Raypak Australia
7 Geddes St.
Mulgrave Vic 3170
Ph. (03) 9535 3333
Fax (03) 9560 4974

Quality System
Quality Endorsed Company

JAN 2003

P/NO 96209131